

U.S. Non-Provisional Application  
In re. Jonathan S. Till  
Filed August 16, 2001  
Attorney Docket No. 10551-211

What is claimed is:

1       1. A method for reversing presbyopia comprising  
2               applying localized energy to the area to be  
3               treated and administering a pharmaceutically  
4               sufficient quantity of a biologically  
5               acceptable chemical substance capable of  
6               breaking the chemical bonds between disulfates  
7               of the cortical lens fibers.

1       2. The method of claim 1, wherein said localized  
2               energy comprises treatment with at least one  
3               or more of heat, energy, sound or enzyme.

1       3. The method of claim 1, wherein said  
2               biologically acceptable chemical comprises  
3               glutathione, thiols and derivatives thereof.

1       4. A method for increasing the amplitude of  
2               accommodation of a human eye having a lens and  
3               a ciliary muscle comprising the step of  
4               administering a pharmaceutically sufficient  
5               quantity of a biologically acceptable reducing

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1                   agent to affect a change in the elasticity of  
2                   the human lens.

1       5. The method of claim 4, wherein the  
2                   biologically acceptable reducing agent is  
3                   selected from the group consisting of  
4                   glutathione , thiols and derivatives thereof.

1       6. The method of claim 4, further comprising the  
2                   step of treating the human eye with external  
3                   energy.

1       7. The method of claim 1, wherein reformation of  
2                   disulfide bonds is prevented.

1       8. A method for treating presbyopia comprising  
2                   breaking disulfide bonds formed about the lens  
3                   fibers to form sulfides and reducing them with  
4                   either hydrogen or other agents.

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1           9. The method of claim 8, further comprising  
2           catalyzing the reaction by applying energy.

1           10. The method of claim 8, wherein said disulfide  
2           bond breaking is catalyzed by agents selected  
3           from the group consisting of aldoreductase,  
4           glyoxylase, glutathione S-transferase, thiol  
5           reductase, tyrosine reductase or any  
6           biologically suitable compatible reductase.

1           11. A method for treating presbyopia comprising  
2           breaking disulfide bonds and reforming the  
3           sulfide bonds with -CH<sub>3</sub> or any other suitable  
4           molecule.

1           12. The method of claim 11, wherein said breaking  
2           disulfide bonds further comprises the applying  
3           external energy.

1           13. The method of claim 11, wherein said breaking  
2           disulfide bonds further comprises applying

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1                   enzyme capable of breaking the disulfide  
2                   bonds.

1       14. The method of claim 13, wherein said enzyme  
2                   comprises S-methyl glutatione, S-Transferase.

1       15. The method of claim 11, wherein said breaking  
2                   disulfide bonds further comprises applying a  
3                   chemical catalyst capable of promoting a  
4                   catalytic reaction.

1       16. The method of claim 15, wherein said chemical  
2                   catalyst comprises methyl-methane  
3                   thiosulfonate and methyl glutatione.

1       17. A method for treating presbyopia comprising  
2                   breaking interlenticular fiber adhesions and  
3                   freeing the fibers to move relative to each  
4                   other.

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1       18. The method of claim 17, wherein said breaking  
2           interlenticular fiber adhesions further  
3           comprises applying external energy.

1       19. The method of claim 17, wherein said breaking  
2           interlenticular fiber adhesions further  
3           comprise applying enzyme capable of breaking  
4           said interlenticular fiber adhesions.

1       20. The method of claim 17, wherein said breaking  
2           interlenticular fiber adhesions further  
3           comprise applying a chemical catalyst capable  
4           of promoting a catalytic reaction.

1       21. A method for reversing presbyopia comprising  
2           applying localized energy to the area to be  
3           treated and administering a pharmaceutically  
4           sufficient quantity of a biologically  
5           acceptable chemical substance capable of  
6           breaking the chemical bonds between disulfates  
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1       22. An agent that prevents or reduces the  
2                   likelihood of reformation of disulfide bonds.

1       23. A pharmaceutical composition for treatment of  
2                   presbyopia comprising thiol transferase,  
3                   glutathione, nicotineamid adenine dinucleotide  
4                   phosphate.

1       24. The pharmaceutical composition of claim 23,  
2                   further comprising a biocompatible carrier.

1       25. The pharmaceutical composition of claim 23  
2                   encased in a viral phage.

1       26. The pharmaceutical composition of claim 24,  
2                   wherein the composition is administered  
3                   topically.

1       27. The pharmaceutical composition of claim 23  
2                   administered systematically.

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1        29. The composition of claim 28, wherein the  
2            composition is activated by introduction of  
3            external energy.

1       30. The composition of claim 23, wherein the thiol  
2                   transferase is present in an amount of 0-20%  
3                   by volume.

1       31. The composition of claim 23, wherein the  
2           glutatione is present in an amount of 0-20% by  
3           volume.

1       32. The composition of claim 23, wherein  
2           nicotineamid adenine dinucleotide phosphate is  
3           present in an amount of 0-20% by volume.

1           33. The composition of claim 23, wherein the  
2           glutathione is S-glutathione.